

# CLAIMS:

1. A gas-operated automatic or semi-automatic gun comprising a barrel having a breech section defined by a breech peripheral surface plus a muzzle section defined by a muzzle peripheral surface,

said breech section having a longitudinal portion of said breech peripheral surface encircled with an array of concave depressions each defined by a depression opening, selected from circular openings and oblong openings, of predetermined area in said breech peripheral surface and of predetermined maximum depth,

said longitudinal portion having a first peripheral surface area A1 before inclusion of said concave depressions and the combined surface areas of said concave depressions and the remaining surface area of said first peripheral surface area after inclusion of said concave depressions having a second peripheral surface area A2, and

the ratio  $A2/A1$  is between about 1.17 and 1.42.

2. The gas-operated gun of claim 1 wherein said concave depressions are circular tool machined and have circular openings.

3. The gas-operated gun of claim 2 wherein all said circular openings are of the same diameter.

4. The gas-operated gun of claim 1 wherein said concave depressions are circular tool machined and have oblong openings.

5. The gas-operated gun of claim 1 wherein said concave depressions are circular tool machined and are a mixture of circular openings and oblong openings.

6. The gas-operated gun of claim 1 wherein said muzzle section contains concave depressions with circular openings of two different sizes.

7. The gas-operated gun of claim 1 wherein said area A1 equals between about 70% and 95% of the area of said breech peripheral surface.

8. The gas-operated gun of claim 1 wherein said predetermined depth is between about 42% and 54% of the thickness of said breech section measured at the longitudinal position of said circular tool machined opening.

9. A gas-operated automatic or semi-automatic gun comprising a barrel having a breech section defined by a breech peripheral surface plus a muzzle section defined by a muzzle peripheral surface,

said breech section having a longitudinal portion of said breech peripheral surface encircled with an array of circular concave depressions each defined by a circular opening of a predetermined area in said breech peripheral surface and by a predetermined depth,

said longitudinal portion having a predetermined first peripheral surface area A1 and the combined surface areas of said circular openings having a predetermined second peripheral surface area A2, and

the ratio  $A2/A1$  is between about 1.17 and 1.42.

10. A gas-operated automatic or semi-automatic gun comprising a barrel defined by a peripheral surface,

said peripheral surface having a longitudinal portion thereof encircled with an array of circular tool machined concave depressions each defined by a depression opening, selected from circular openings and oblong openings, of predetermined area in said peripheral surface and of predetermined maximum depth,

said longitudinal portion having a first peripheral surface area before inclusion of said concave depressions A1 and the combined surface areas of said concave depressions and the remaining surface area of said first peripheral surface area after inclusion of said concave depression having a second peripheral surface area A2, and

the ratio  $A2/A1$  is between about 1.17 and 1.42.